

What is claimed is:

1. A method of interference reduction in a spread spectrum receiver including a rake receiver having a plurality of fingers for processing a plurality of data signals and an associated plurality of pilot signals, the method comprising:

generating a plurality of intra-finger interference cancellation signals using said plurality of pilot signals, each of said plurality of intra-finger interference cancellation signals being associated with one of said plurality of fingers;

- weighting ones of said plurality of intra-finger interference cancellation signals so as to generate a set of weighted intra-finger interference cancellation signals;

synthesizing at least one inter-finger interference cancellation signal in accordance with said set of weighted intra-finger cancellation signals; and

subtracting said at least one inter-finger cancellation signal from one of said plurality of data signals.

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2. The method of claim 1 wherein said plurality of fingers is comprised of N fingers and wherein said set is comprised of N-1 weighted intra-finger interference cancellation signals.

3. The method of claim 1 wherein said synthesizing further includes generating a plurality of inter-finger cancellation signals respectively associated with said plurality of fingers, each of said inter-finger cancellation signals being synthesized in accordance with a different group of ones of said set of weighted intra-finger interference cancellation signals.

4. The method of claim 3 wherein said subtracting further includes subtracting each of said plurality of inter-finger cancellation signals from a corresponding one of said plurality of data signals, thereby yielding a plurality of interference-reduced data signals.

5. The method of claim 1 wherein said generating further includes creating a plurality of pilot channel models, each of said plurality of pilot channel models being associated with one of said plurality of fingers.

6. The method of claim 1 wherein said plurality of pilot signals is comprised of a plurality of primary pilot signals and a corresponding plurality of secondary pilot signals, said generating further including creating a plurality of primary pilot channel models corresponding to said plurality of primary pilot signals and a plurality of secondary pilot channel models corresponding to said plurality of secondary pilot signals.

7. The method of claim 5 wherein said generating includes generating a first of said plurality intra-finger interference cancellation signals within a first of said plurality of fingers, said first of said plurality of intra-finger interference cancellation signals being created based at least in part upon a first of said plurality of pilot channel models associated with said first of said plurality of fingers.

8. The method of claim 4 wherein each of said intra-finger interference cancellation signals is generated based at least in part upon one of said cleaned data signals.

9. A method of interference reduction in a spread spectrum receiver including a rake receiver having N fingers for processing N data signals and N associated pilot signals, the method comprising:

generating N intra-finger interference cancellation signals using said N associated pilot signals, each of said N intra-finger interference cancellation signals being associated with one of said N fingers;

weighting ones of said N intra-finger interference cancellation signals so as to generate N weighted intra-finger interference cancellation signals;

synthesizing N inter-finger interference cancellation signals, each of said N inter-finger cancellation signals being synthesized on the basis of one or more of said N weighted intra-finger interference cancellation signals; and

subtracting each of said N inter-finger interference cancellation signals from a corresponding one of said N data signals, thereby generating N interference-reduced data signals.

10. The method of claim 9 further including determining interference levels remaining within said N interference-reduced data signals.

11. The method of claim 10 wherein said determining is performed in a round robin manner relative to said N fingers.

5 12. The method of claim 9 wherein each of said N intra-finger interference cancellation signals is generated on the basis of one of said N interference-reduced data signals.

13. The method of claim 9 wherein said generating N intra-finger interference cancellation signals further includes creating at least N pilot channel models, each of said N pilot channel
10 models being associated with one of said N fingers.

14. A spread spectrum receiver comprising:

a rake receiver having N fingers for processing N data signals and N associated pilot signals, each of said N fingers including an intra-finger interference cancellation module
15 configured to generate an intra-finger interference cancellation signal using at least one of said N associated pilot signals; and

an inter-finger interference cancellation module for synthesizing N inter-finger interference cancellation signals, each of said N inter-finger cancellation signals being synthesized on the basis of a set of said intra-finger interference cancellation signals, said inter-finger interference cancellation module including:
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a gain adjustment unit for weighting said intra-finger cancellation signals so as to generate a plurality of weighted intra-finger cancellation signals, and

a summation unit adapted to combine ones of said plurality of weighted intra-finger cancellation signals.

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15. The receiver of claim 14 wherein each of said intra-finger interference cancellation modules includes a subtraction unit to which is applied one of said N inter-finger cancellation signals and one of said N data signals, thereby yielding N interference-reduced data signals.

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16. The receiver of claim 14 wherein each of said intra-finger cancellation modules includes a pilot channel processing module configured to create a pilot channel model, each of said intra-finger cancellation signals being generated in accordance with one said pilot channel model and one of said N interference-reduced data signals.

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17. The receiver of claim 15 wherein said inter-finger interference cancellation module further includes an interference cancellation verification unit adapted to determine interference levels remaining within said N interference-reduced data signals.

10 18. The receiver of claim 17 wherein said interference cancellation verification unit is disposed to determine said interference levels in a round robin manner relative to said N fingers.

15 19. The receiver of claim 17 wherein said interference cancellation verification unit is configured to identify ones of said N pilot signals interfering with reception of said data signals within ones of said N fingers.

20. The method of claim 1 further including identifying ones of said plurality of pilot signals interfering with reception of said data signals within ones of said plurality of fingers.

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